

Claims

We claim:

Claim 1-A distillation apparatus comprising:

a container holding water;

a heating section on said container and extending into said water to

a condenser section on said container and adjacent to said heating section to condense said vapor into distilled water; and

a thermoelectric section having a Peltier effect device interposed between said heating section and said condenser section, said Peltier effect device having one side adjacent and in contact with said condenser section to transfer heat therefrom and an other side adjacent to and in contact with said heating section to transfer heat thereto to boil said water into said vapor and feed said vapor through said condenser to condense it into said distilled liquid.

Claim 2-A distillation apparatus according to claim 1 further comprising:

an insulating cover extending across said container and having a traverse opening, said Peltier effect device of said thermoelectric section fitting in said traverse opening to place said one side in contiguous contact with said heating section and said other side in contiguous contact with said condenser section.

Claim 3-A distillation apparatus according to claim 2 wherein said heating section has a tubular-shaped insulating wall extending downward into said water to form an open-ended T-shaped percolating chamber to

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contain a portion of said water therein.

Claim 4-A distillation apparatus according to claim 3 wherein said heating section has a heat conductive plate and a rod connected together to extend into said percolating chamber and said water portion.

Claim 5-A distillation apparatus according to claim 4 wherein said plate has an inner surface disposed adjacent to and in contact with said Peltier effect device and an outer surface in contact with said water portion in said percolating chamber.

Claim 6-A distillation apparatus according to claim 5 wherein said rod orthogonally extends from said plate into said percolating chamber, said vapor forms on the outer surface of said rod and said outer surface of said plate, and said heating section has a plenum collecting said vapor.

Claim 7-A distillation apparatus according to claim 6 wherein condenser section has a passageway serpentinely extending through a block of heat conducting material to receive said vapor at an inlet port and to feed said distilled water therefrom at an outlet port.

Claim 8-A distillation apparatus according to claim 7 wherein heat is transferred to said water by absorbing heat in said one side of said Peltier effect device, conducting said absorbed heat through said Peltier effect device and said plate and said rod, reusing said absorbed heat to partially heat said water portion, and generating heat in said

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Peltier effect device at said other side and conducting said generated heat to said plate and rod to boil parts of said water portion into said vapor along outer surface of said plate and said rod.

Claim 9-A method of distilling water comprising the steps of:

extending a heating section into liquid in a container;

heating said liquid to boil said liquid into a vapor;

condensing said vapor into a distilled liquid in a condenser section on said container and adjacent to said heating section; and

transferring heat with a Peltier effect device interposed between said heating section and said condenser section, said Peltier effect device having one side adjacent and in contact with said condenser section to transfer heat therefrom and an other side adjacent to and in contact with said heating section to transfer heat thereto to boil said liquid into said vapor and feed said vapor through said condenser to condense it into said distilled liquid.

Claim 10-A method according to claim 9 further comprising the steps of:

extending an insulating cover extending across said container;

mounting said Peltier effect device in a traverse opening in said insulating cover; and

placing said one side of said Peltier effect device in contiguous contact with said heating section and said other side of said Peltier effect device in contiguous contact with said

condenser section.

Claim 11-A method according to claim 10 further comprising the steps of:

extending a tubular-shaped insulating wall downwardly into said liquid to form an open-ended T-shaped percolating chamber;
and
containing a portion of said liquid in said T-shaped percolating chamber.

Claim 12-A method according to claim 11 further comprising the step of:

connecting a heat conductive plate and rod of said heating section to extend into said percolating chamber and said liquid portion therein.

Claim 13-A method according to claim 12 further comprising the steps of:

placing an inner surface of said plate adjacent to and in contact with said Peltier effect device; and
contacting an outer surface of said plate with said liquid portion in said percolating chamber.

Claim 14-A method according to claim 13 further comprising the steps of:

extending said rod orthogonally from said plate into said percolating chamber;
forming said vapor on a surface of said rod and said outer surface of said first plate; and
collecting said vapor in a plenum of said heating section.

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Claim 15-A method according to claim 14 further comprising the steps of:

extending a passageway serpentinely through a block of heat
conducting material of said condenser section;
receiving said vapor at an inlet port of said serpentinely
extending passageway; and
feeding said distilled liquid from an outlet port of said
serpentinely extending passageway.

Claim 16-A method according to claim 15 wherein said step of
transferring heat to said liquid includes the steps of:

absorbing heat in said one side of said Peltier effect device;
conducting said absorbed heat through said Peltier effect device
and said first plate and rod;
reusing said absorbed heat to partially heat said liquid portion;
generating heat in said Peltier effect device at said other side;
conducting said generated heat to said plate and rod; and
boiling parts of said liquid portion into said vapor along outer
surfaces of said plate and said rod.